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The diagram illustrates the blood coagulation cascade, showing the activation of various clotting factors. It is divided into three main sections: the Intrinsic pathway, the Extrinsic pathway, and the Common pathway.

Intrinsic pathway: This pathway starts with the activation of Factor XII to Factor XIIa by HMWK surfaces. Factor XIIa then activates Factor XI to Factor XIa. Factor XIa activates Factor IX to Factor IXa. Factor IXa, in the presence of Factor VIIIa (activated from Factor VIII by Factor Xa), activates Factor X to Factor Xa.

Extrinsic pathway: This pathway starts with the activation of Factor VII to Factor VIIa by Tissue factor. Factor VIIa then activates Factor X to Factor Xa.

Common pathway: Factor Xa, in the presence of Factor Va (activated from Factor V by Thrombin), activates Prothrombin to Thrombin. Thrombin then activates Factor XIII to Factor XIIIa and Factor V to Factor Va. Thrombin also converts Fibrinogen to Fibrin. Factor XIIIa then cross-links Fibrin to form Cross-linked fibrin. Thrombin also activates Protein C to Activated protein C, which then inhibits Factor Va and Factor VIIIa. Thrombin also activates Thrombomodulin, which then inhibits Factor Va and Factor VIIIa.

Regulatory mechanisms: Activated protein C and Thrombomodulin are shown as negative regulators of the cascade, inhibiting the activity of Factor Va and Factor VIIIa. Thrombin is shown as a positive regulator, activating Factor V and Factor XIII.

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graph TD
    subgraph Intrinsic_Pathway [Intrinsic coagulation pathway]
        XII[Factor XII] -- "HMWK surfaces" --> XIIa[Factor XIIa]
        XIIa --> XI[Factor XI]
        XI --> XIa[Factor XIa]
        IX[Factor IX] -- "F VIIIa" --> IXa[Factor IXa]
    end

    subgraph Extrinsic_Pathway [Extrinsic coagulation pathway]
        VII[Factor VII] -- "Tissue factor" --> VIIa[Factor VIIa]
        VIIa --> X[Factor X]
    end

    XIa --> IXa
    IXa -- "F VIIIa" --> Xa[Factor Xa]
    VIIa --> Xa

    subgraph Common_Pathway [Common pathway]
        Xa -- "F Va" --> Prothrombin[Prothrombin]
        Prothrombin --> Thrombin[Thrombin]
        Thrombin --> Fibrinogen[Fibrinogen]
        Fibrinogen --> Fibrin[Fibrin]
        Fibrin --> CrossLinked[Cross-linked fibrin]
        Thrombin --> XIIIa[Factor XIIIa]
        XIII -- Factor XIII --> XIIIa
        XIIIa --> CrossLinked
        Thrombin --> ProteinC[Protein C]
        ProteinC --> ActivatedProteinC[Activated protein C]
        ActivatedProteinC --> FVa[Factor Va]
        ActivatedProteinC --> FVIIIa[Factor VIIIa]
        Thrombin --> Thrombomodulin[Thrombomodulin]
        Thrombomodulin --> FVa
        Thrombomodulin --> FVIIIa
    end

    FVIII --> FVIIIa
    FV --> FVa
    Thrombin --> FVIIIa
    Thrombin --> FVa
    Thrombin --> XIIIa
    Thrombin --> ProteinC
    Thrombin --> Thrombomodulin
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